



ImageXpress Micro Widefield High Content Screening System

Benefits

- Accelerate screens to > 10 million cells/hour
- Expand assay window with 3-log dynamic range
- One 384-well, one image
- Reliable assays with < 5% CV of intensities across a plate
- One system, nine configurations
- Only truly end-to-end solution for HCS

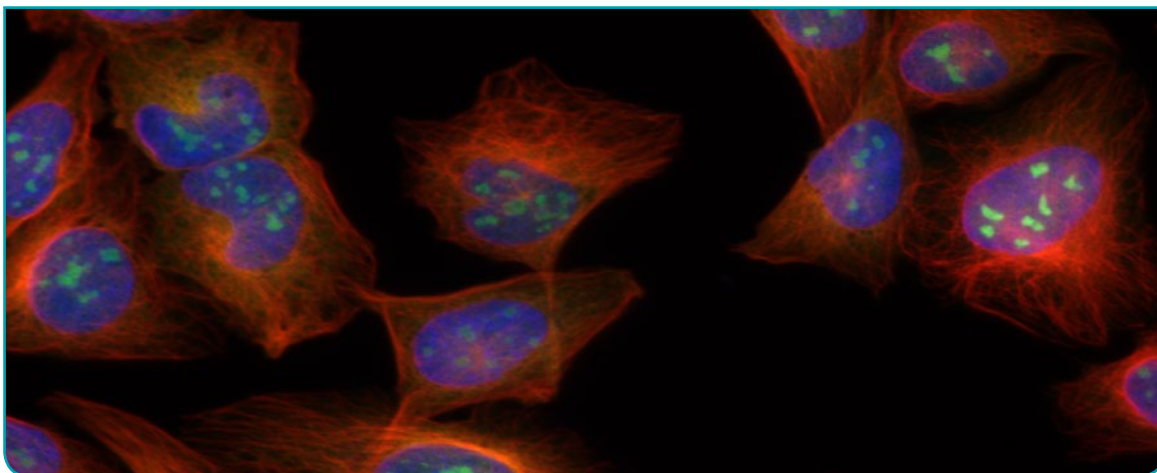
The ImageXpress[®] Micro Widefield High Content Screening System is the ultimate combination of speed and flexibility in a turnkey solution to streamline the research and discovery workflow.

Built on over 25 years of cell-based imaging experience, the ImageXpress Micro System captures research-quality images with the widest range of objective lenses, enabling you to work at the resolution appropriate for your biology, including small organism, cellular or intracellular events. The system's best-in-class design precisely locates and identifies sub-cellular features, over multi-day time-lapse experiments when required.

For researchers looking to push the boundaries of science, the XL model of the ImageXpress Micro System leverages large field-of-view optics to map large structures with minimal tiling. In addition, querying of large cell populations is accelerated three fold, speeding up the characterization of highly heterogeneous samples or identification of rare sub-populations.

Combined with mature software, the custom designed ImageXpress Micro System outperforms both automated microscopes built from off-the-shelf components as well as other high content screening systems, providing a fast and robust platform to translate new discoveries into scientific breakthroughs.

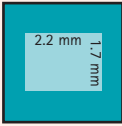
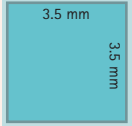
Image of U2OS cells stained for nuclei (blue), tubulin (red) and undisclosed nuclei marker (green) were acquired using standard ImageXpress Micro System configured with 40X S fluor (0.9 NA).



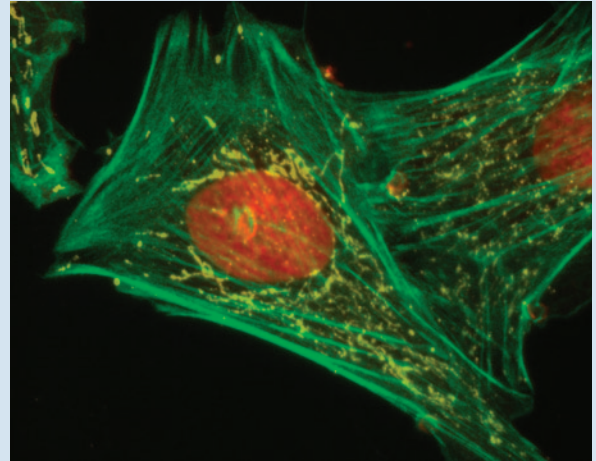
The ImageXpress Micro System does not compromise your assay's throughput or quality. Offering more data points per image, the XL model decreases your time to perform cellular- and high-resolution screens using a large field-of-view camera. Assay window and reliability are enhanced with 3-log dynamic range and < 5% CV for intensities across the plate, making certain your scientific breakthroughs are picture perfect for research publications.

ImageXpress Micro System features:

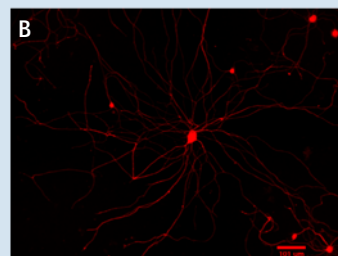
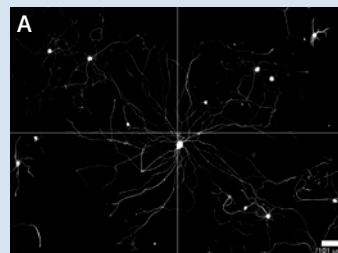
- Highest image flexibility score (IFS) of any widefield high content screening system. *Note: IFS = sensor size (4.66 megapixel) x magnification range (100) = 466*
- Standard and XL models
- Adjustable field-of-view focuses on sample area most appropriate for your assay
- Widest selection (> 25) of objectives
 - 1x to 100x magnification
 - 0.05 to 0.95 numerical aperture (NA), air
 - Oil objectives with 1.3 NA available for research imaging

	Standard Model	XL Model
Sensor	1.4 megapixel cooled CCD	4.66 megapixel scientific CMOS
Field-of-View (4x objective shown to scale on 384 well)		
Light Source	300W xenon light source 340/380 nm (Fura-2) to > 650 nm	Solid state light source 380 nm (DAPI) to 650 nm (Cy5) > 10,000 hour life span

- Industry-leading 100 nm resolution voice coil-driven X, Y, and Z stages enables:
 - Capture of intricate sub-cellular features across images
 - Monitoring of long structures (e.g. neurons) across high-resolution tiled or stitched images
 - Ensures repeatability during multi-day time-lapse experiments
- Modular design expands the system's functionality
 - Label-free
 - Live-cell (temperature, air and humidity)
 - Fluidics
 - Rapid excitation filter switching option
 - *Note: all options, filters, and objectives are available at point of sale or as after market upgrades*
- Most extensive sample compatibility
 - Slides to plates
 - 6 to 1536 wells
 - Thin to thick plate bottoms
 - Glass to plastic
 - Transwell
 - Low to high profile
- Only truly end-to-end solution for high content screening



Molecular Probes FluoCells slide imaged on a standard ImageXpress Micro System with 100x Plan Fluor 1.3 NA oil objective. Muntjac cells with mouse anti-OxPhos Complex V inhibitor protein, Alexa Fluor 555 goat anti-mouse IgG, Alexa Fluor 488 phalloidin and TO-PRO-3.



Seamless tiling

Precise tiling of images possible with < 100 nm stage resolution. **A:** Image is a 2 x 2 array of images from a standard ImageXpress System. **B:** Image (red) shows neurite segmentation is not compromised when it spans multiple images.

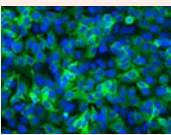
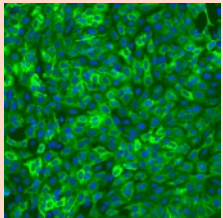
- MetaXpress® Software: image acquisition and analysis to address your unique application
- MetaXpress Software Application Modules: modular toolbox for your 100 most common applications
- MetaXpress Software Journals: sophisticated macros to analyze unique applications
- MetaXpress® PowerCore™ Software: option for scaling image analysis to be faster than acquisition
- MDCStore™ Data Management Solution: securely stores imaging data so it is fully accessible from the first image acquired to years of usage
- AcuityXpress™ Software: data visualization, mining and hit selection are ready to use upon system installation

Performance

- Low-resolution three-color cell scoring application
 - > 10 million cells/hour
 - > 1,100 wells/hour
- High resolution two-color assay (e.g. Transfluo[®] beta arrestin translocation assay)
 - > 1 million cells/hour
 - > 1,500 wells/hour
- Analysis scaling to be faster than acquisition

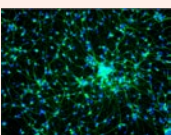
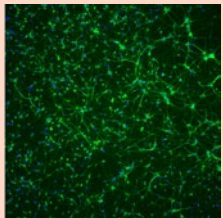
Transfluo[®] Assay

Settings: 20X Plan Apo, no binning, 2 colors, 384-well glass-bottomed plate, < 14 minutes with 1 site/well*

Model	Image	Field-of-View	Cells/Field	Sites for 70% Coverage of Well	Assay Quality
Standard		0.45 x 0.34 mm	200	50	Pits: Z' = 0.5 assay window = 3 Vesicles: Z' = 0.67 assay window = 11
XL		0.7 x 0.7 mm	600	16	Pits: Z' = 0.64 assay window = 8 Vesicles: Z' = 0.69 assay window = 24

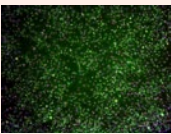
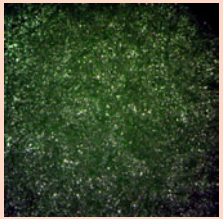
Neurotoxicity Assay

Settings: 10X Plan Fluor, 2x binning, 2 colors, 96-well plate, < 4 minutes with one site/well*

Model	Image	Field-of-View	Cells/Field	Sites for 75% Coverage of Well	Assay Quality
Standard		0.9 x 0.67 mm	120	50	Total outgrowth: Z' = 0.58 assay window = 19.8
XL		1.4 x 1.4 mm	500	16	Total outgrowth: Z' = 0.71 assay window = 19.9

Cytotoxicity Assay**

Settings: 4X Plan Apo, 2x binning, 3 colors, 384-well plastic-bottomed plate, < 19 minutes with one site/well*

Model	Image	Field-of-View	Cells/Field	Sites for 70% Coverage of Well	Assay Quality
Standard		2.2 x 1.7 mm	5,000	2	Cytoskeletal degradation: Z' = 0.71 assay window = 4.4
XL		2.8 x 2.8 mm	> 10,000	1	Cytoskeletal degradation: Z' = 0.72 assay window = 4.3

* Each additional site will double acquisition time. XL model can eliminate half number of sites required by standard camera.

** Reduced custom field of view used to avoid capturing edge of well with 4x.

Technical specifications

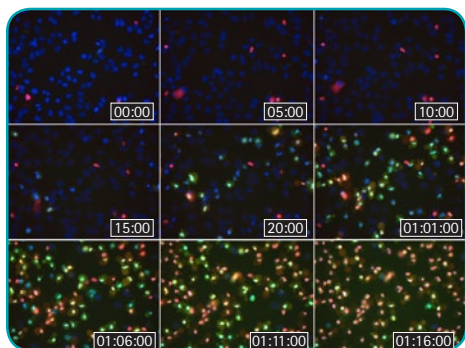
- Industry-leading fast laser autofocus
- 4-position automated objective changer
- 5-position automated filter cube changer
- Fully automated X-Y sample stage and Z focus stage with > 100 nm resolution
- 20" H x 18" W x 27" D, 180 lbs. (not including options)

Options

- Nikon objectives (1x–100x supported)
- Filter cubes configured for specific dye excitation and emission

Environmental Control Option

- Enables multi-hour/multi-day live cell time-lapse imaging
- User-defined premixed air allows researchers to select atmospheric conditions most appropriate for their cell type (e.g. 5% or 10% CO₂)
- Temperature control (30–40°C ± 0.5°C) of the sample plate maintains physiological environment
- Humidity maintenance minimizes evaporation (0.5 µL/well/hour from 96- or 384-well formats) of media and extends measurement time
- Field-upgradeable
- Compatible with Fluidics or Transmitted Light Options



Transmitted Light Option

- Phase optics generates high contrast images where unstained cells are easily viewed or separated from their background (4x–60x)
- Brightfield setting compatible with all objective lenses offered
 - Ideal for non-fluorescent histochemically stained samples
- Overlay with fluorescent images for fluorophore-independent visualization of cell morphology
- Nikon 100W Pillar Diascopic Illuminator with TE-C ELWD Condenser
 - 0.3 NA with 65 mm WD and PhL, Ph1, and Ph2 selectable phase rings
 - Compatible with Environmental Control
 - Not compatible with Fluidics Option

Fluidics Option

- Single-channel pipettor
- Dispense volumes from 3 µL to 200 µL ± 1 µL ± 5%
- Uses 96- or 384-well format FLIPR® tips
- Compound addition
- Media exchange
- Holds two compound/media plates
- Optional plate heating
- Environmental Control comes standard with the Fluidics Option
- Field-upgradeable



ImageXpress Micro XL System with Transmitted Light Option installed.



ImageXpress Micro XL System with Fluidics Option installed.

HeLa cells on 96-well Costar plates. Cells were pulsed with Hoechst for 10 minutes and then incubated with Propidium iodide (red) to label dead cells and Nucview488 (green) to monitor apoptosis via Caspase 3 activity increases. Additionally, cells were treated with Etoposide 100 µM to induce cell death. Representative images are shown from a 1+ day time course monitoring progression of apoptosis on a standard ImageXpress Micro System. Time is shown in bottom right in DAYS:HH:MM.



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